AUGUST 1973, No. 8

FISHING INFORMATION

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NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

NATIONAL MARINE FISHERIES SERVICE

SOUTHWEST FISHERIES CENTER
LA JOLLA, CALIFORNIA

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
SOUTHWEST FISHERIES CENTER
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FISHING INFORMATION

AUGUST 1973, No. 8

B. J. Rothschild, Director, SOUTHWEST FISHERIES CENTER
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PREFACE

This publication, Fishing Information, appears monthly and contains 1) fishery advisory information, 2) a narrative description of pertinent surface temperature conditions, 3) a narrative description of subsurface temperature structure for parts of the North Pacific, 4) charts of winds and pressures for the eastern North Pacific, 5) charts of sea surface temperature for the North Pacific and eastern tropical Pacific, and 6) charts of subsurface temperature structure in the eastern North Pacific.

A supplement to Fishing Information appears at 15-day intervals throughout the year. This is a chart of sea surface temperature (contoured at 2°F (1°C) intervals) from Baja California to Vancouver Island out to about 135°W. Special bulletins are published in conjunction with the 15-day sea surface temperature charts which include short-term projections of albacore distribution and locations of productive fishing areas, information on oceanographic and atmospheric conditions, and other information as is appropriate during the albacore fishing season.

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Submitted for publication - September 18, 1973

CONTENTS

PAGE

Acknowledgements iv

Sea Surface Temperature and Environmental Conditions - August 1973, L. Eber and F. Miller 1

Subsurface Temperature Structure in the Northeast Pacific Ocean, J. F. T. Saur. 2

Airborne Infrared Sea Surface Temperature Survey off San Diego, J. L. Squire 4

ENVIRONMENTAL CHARTS, PACIFIC OCEAN - AUGUST 1973

Figure 1. Thirteen-year mean (1961-73) observed sea level values of barometric pressure (millibars), resultant wind direction (degrees true), resultant wind speed (knots) and average wind speed (knots) regardless of direction 5

Figure 2. Observed sea level values of barometric pressure (millibars), resultant wind direction (degrees true), resultant wind speed (knots) and average wind speed (knots) regardless of direction 6

Figure 3. Mean sea surface temperature, eastern North Pacific Ocean. Squares show temperatures at weathership stations. Numerals on shore are temperatures at coastal and lightship stations 7

Figure 4. Mean sea surface temperature chart, western North Pacific Ocean. 8

Figure 5. Deviation of sea surface temperatures, eastern North Pacific Ocean from 20-year mean (1948-67). Hatched areas are colder in 1973. 9

Figure 6. Deviation of sea surface temperatures, western North Pacific Ocean from 20-year mean (1948-67). Hatched areas are colder in 1973. 10

Figure 7. Deviation of sea surface temperatures, eastern North Pacific Ocean from those of August 1972. Hatched areas are colder in 1973 11

Figure 8. Deviation of long-term chart H. O. 225 from new base period 1948-67 (20-year mean). Shaded areas indicate 20-year mean colder than H. O. 225 12

Figure 9. Mean sea surface temperatures, eastern tropical Pacific Ocean. Numerals on shore are temperatures at coastal stations 13

Figure 10. Deviation of sea surface temperatures, eastern tropical Pacific Ocean from 20-year mean (1948-67). Shaded areas are colder in 1973. Contours are dashed in sparse data areas 14

Figure 11. Surface temperature and salinity and subsurface temperature structure from expendable bathythermograph observations between San Francisco and Honolulu: July 28-August 1, 1973 15

Figure 12. Surface temperature and salinity and subsurface temperature structure from expendable bathythermograph observations between San Francisco and Honolulu: August 11-15, 1973. 16

Figure 13. Airborne Infrared Sea Surface Temperature Survey off San Diego on August 6, 13, 20, and 28. 17

ENVIRONMENTAL CHARTS ANALYZED BY:
L. Eber (Figures 4 and 6), F. Miller (Figures 9 and 10)
J. Renner (Figures 1, 2, 3, 5, 7, and 8), J. F. T. Saur (Figures 11 and 12)
J. L. Squire (Figure 13)

TECHNICAL EDITOR:
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Expendable bathythermograph observations are made by the mates of the S. S. Hawaiian Enterprise of Matson Navigation Co., and processed with assistance from the NMFS Environmental Group, Monterey. The project was partially supported by National Science Foundation Grant AG-256 and the Office of Naval Research, Gov. Order NA onr-9-74.

Sea Surface Temperature and Environmental Conditions

L. EBER AND F. MILLER

Eastern North Pacific

Seasonal warming of sea surface temperature in August 1973 was below normal in the Gulf of Alaska and in a broad area extending southwestward from the U.S. west coast. Sea temperatures increased at an above-normal rate in central areas of the eastern North Pacific and in the area west and north of Hawaii.

These changes intensified the anomalously cool conditions already existing in coastal waters and caused negative deviations from the long-term means to spread offshore. The excess warming in mid-ocean areas reduced the magnitude of negative deviations between 140°W and 160°W at mid-latitudes. It failed, however, to overturn the condition of below-normal temperature, which consequently still covers most of the eastern North Pacific above 35°N (Figure 5).

Atmospheric conditions in August 1973 were characterized by high barometric pressure centered at about 40°N, 150°W (Figure 2). This pressure distribution departs from the long-term mean by more than 6 millibars in the vicinity of 40°-50°N, 140°-150°W. It is associated with an anomalous anticyclonic wind circulation in which relative strong northerly winds occurred east of 140°W, between 30° and 50°N, and southerly flow was stronger than normal west of 150°-155°W.

Heat exchange processes related to this wind regime probably account for most of the deviations from the normal July-August change of sea surface temperature. In the southerly flow, seasonal warming was accelerated through transport of warm water northward and reduced heat loss by evaporation. The opposite effect occurred with northerly flow through transport of cold water southward and increased heat loss by evaporation.

Western North Pacific

Sea surface temperatures in the western North Pacific tended to warm a little slower than normal in August 1973. Negative departures from the long-term mean spread over slightly more area than in the preceding month and the positive departures off Hokkaido and Honshu, and near 30°N, 175°E to 175°W decreased in magnitude. The general pattern of anomalous temperature in August (Figure 6) looked very similar, however, to that of July.

Eastern Tropical Pacific

The dominant feature in the sea surface temperature pattern continues to be the rapid cooling along the coast of Peru and in the equatorial extension of the Peru Current between the equator and 5°S. The tongue of cold surface water extending westward along the equator, flanked by strong north-south temperature gradients (Figure 9), are characteristic of strong upwelling which has become particularly well defined between 90°W and 130°W. Southeast trades of 15-20 knots have occurred in this sector of the equatorial Pacific as a result of a strong subtropical high pressure system over the eastern part of the South Pacific. The persistent high pressure in this area is in great contrast to the weak subtropical high pressure systems which existed off South America in the southern winter of 1972.

A relatively confined area of warm water with significant positive deviations from normal temperature is shown between the equator and 5°N to the east of 120°W in Figure 10. Light winds, relatively clear skies and no significant upwelling contributed to maintaining the high sea surface temperatures in this area. The contiguous positive and negative anomaly patterns result in a sharp equatorial frontal boundary between 90°W and 120°W along the equator.

North of 10° N the only significant change from July to August took place off the coast of Mexico where the magnitudes of large negative anomalies became lower. Frequent tropical storms in July caused considerable wind mixing in the surface layer of the ocean along the path of the storms. In August the tropical storm frequency was markedly reduced and surface water temperatures are slowly warming up. Elsewhere there has been very little change in the region between 10° N and 20° N over the eastern tropical Pacific.

Subsurface Temperature Structure in the Northeast Pacific Ocean

J. F. T. SAUR

The two sections of subsurface temperature structure which appear in this issue, Figures 11 and 12, were prepared from XBT observations taken between Hawaii and San Francisco during the periods July 28-August 1 and August 11-15, 1973.

We have reason to believe that instrumental problems may have caused a positive bias to the recorded temperatures used in these sections. In particular, temperatures from Hawaiian Enterprise Voyage 70 (Figure 11) appear to be about 1° C (2° F) too high. Consequently, no interpretation will be made regarding changes in heat content. The interpretation of the temperature structure will be based primarily on observations made in mid-August on Voyage 71 (Figure 12).

Near surface temperature structure continued to show the effects of seasonal downward heat transfer through the surface into the ocean and winds generally below 15 knots. Well-defined surface mixed layers were rare. Partially mixed surface layers, generally less than 30 meters deep, had temperatures decreasing downward in the layer by as much as 1° C (2° F), as shown by the temperature profiles in Figures 11 and 12.

Evidence of a narrow band of upwelling adjacent to the California coast appeared in the mid-August section as it did in mid-July. Figure 12 shows that approaching the coast from observation 2, the surface temperature decreased by about 2.5° C (4.5° F) to a temperature slightly below 10° C (50° F), the subsurface isotherms above 120 meters depth sloped steeply upward, and the surface salinity increased from slightly below 33.0‰ to 33.5‰. All are indications of the rise of sub-surface water toward the surface.

The boundary between the California Current region and the transition zone continued to be indistinct. Going away from the coast, Figure 12 shows that the 12°-15° C (54°-59° F) isotherms sloped downward in the California Current region, but tended to level off at station 6. The surface salinities were around 33.0‰ at stations 2-4, but rose with surface temperatures from stations 4-7. These indicate that the boundary lay in the vicinity of station 5, near 132° W about 500 nautical miles from the coast.

Irregular vertical thermal structure between the depths of 60 and 120 meters (see profile 10 in Figure 11 and profiles 6 and 10 in Figure 12) and surface salinities between 33.8‰ and 34.4‰ occurred at stations 6-10 indicating that the transition zone lay between 500 miles and 950 miles from the coast along the section.

The boundary near 140° W, between the transition zone and the Eastern North Pacific Central water, was marked by a large westward increase of surface salinity, from station 10-11 in both sections. The isotherms below 250-300 meters sloped downward here before developing a typical wavy pattern to the west toward Hawaii.

The temperature band between 16° and 19° C (61° and 66° F) is shaded in Figures 11 and 12 because of its possible relation to albacore availability. At the surface the band lay totally in the California Current region between points about 100 and 300 miles from the coast off central California. The bottom of the layer dropped to depths greater than 60 meters (200 feet) at about 500 miles from the coast.

Airborne Infrared Sea Surface Temperature Survey Off San Diego

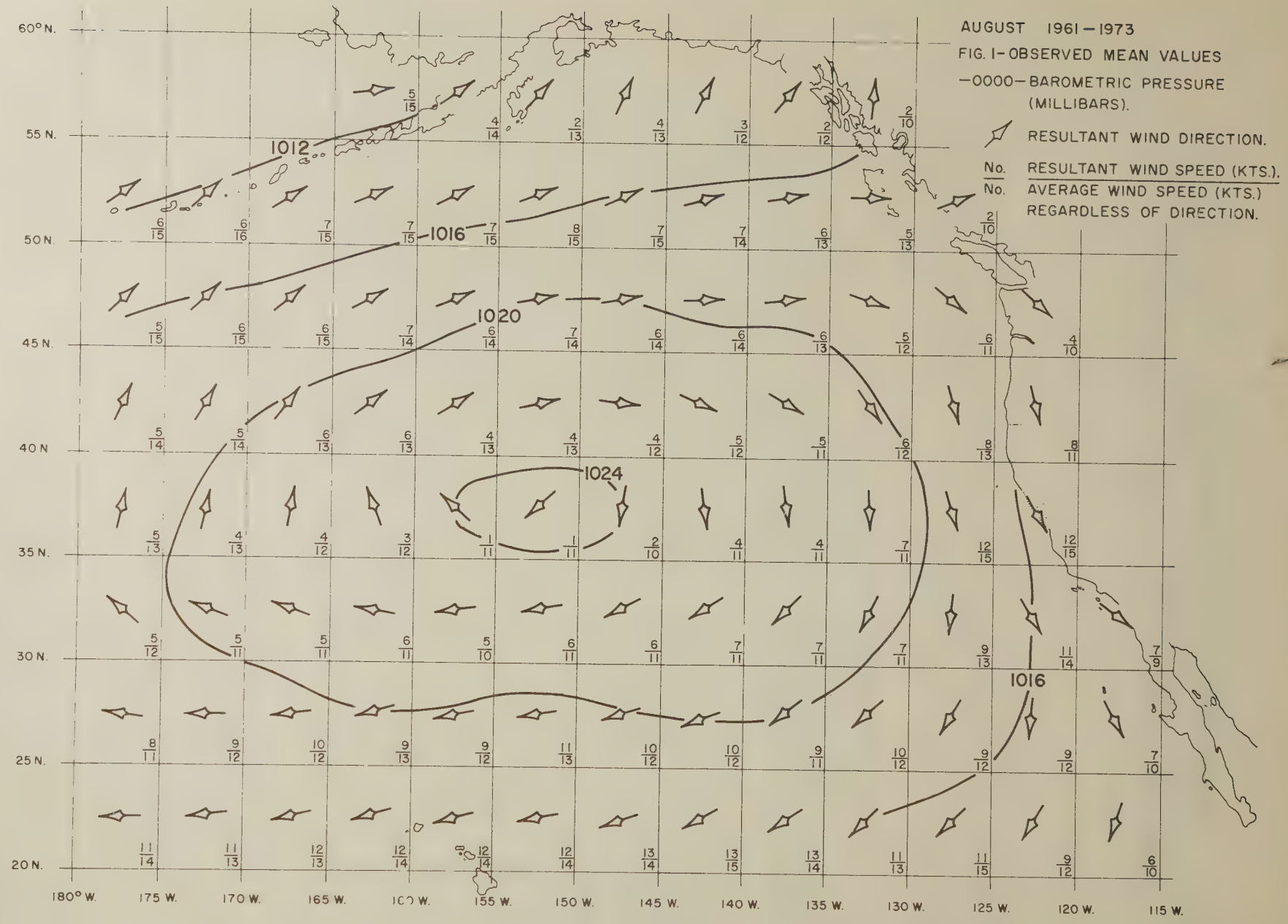
J. L. SQUIRE

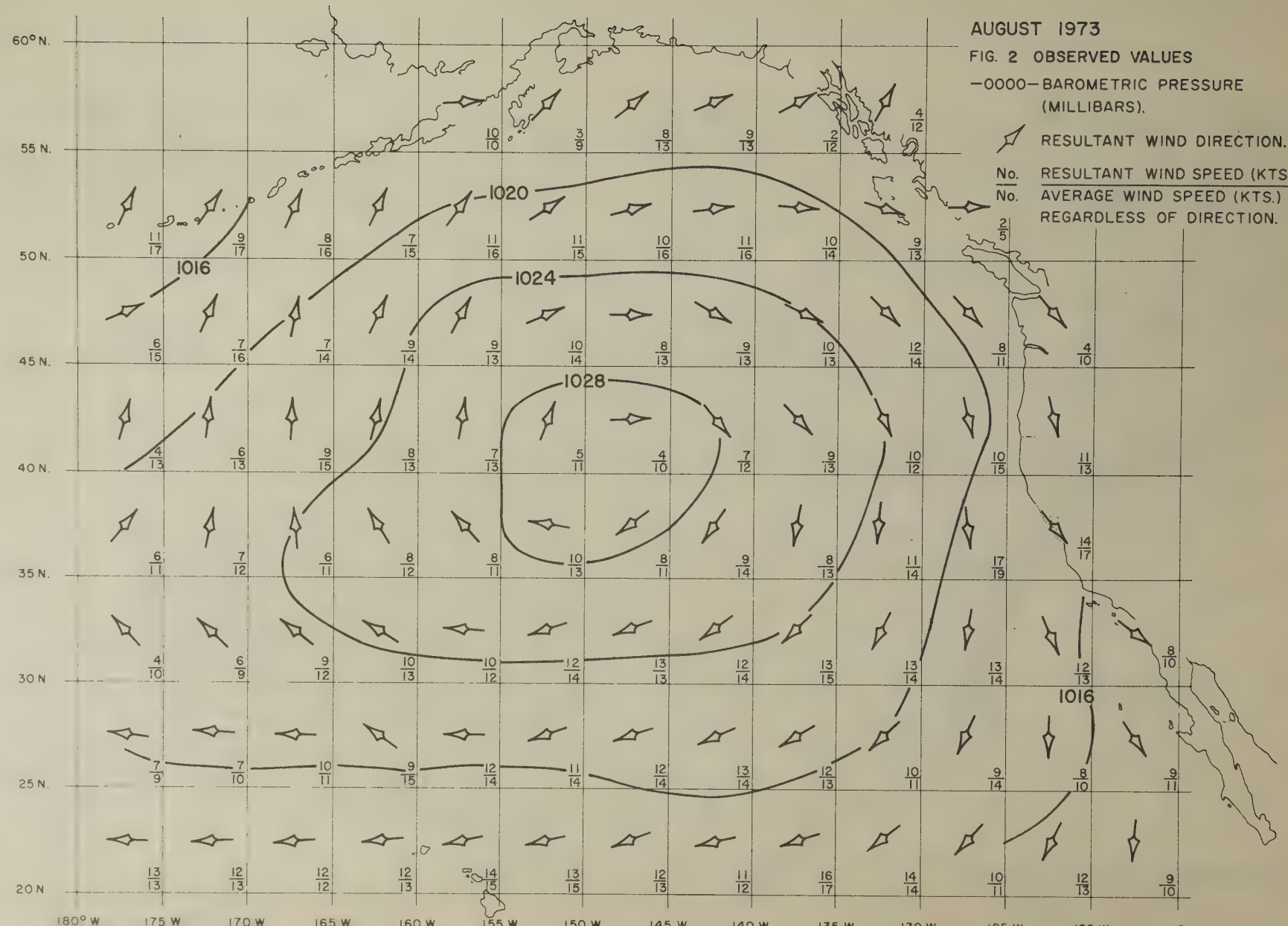
Sea surface temperature surveys are being conducted each week, April through October for the important fishing areas off San Diego. These surveys are part of a cooperative program between the NMFS La Jolla Laboratory and the California Department of Fish and Game to evaluate the effects of temperature changes on the distribution of important game fish species such as yellowtail, bonito, barracuda, white sea bass and other species entering the sport catch.

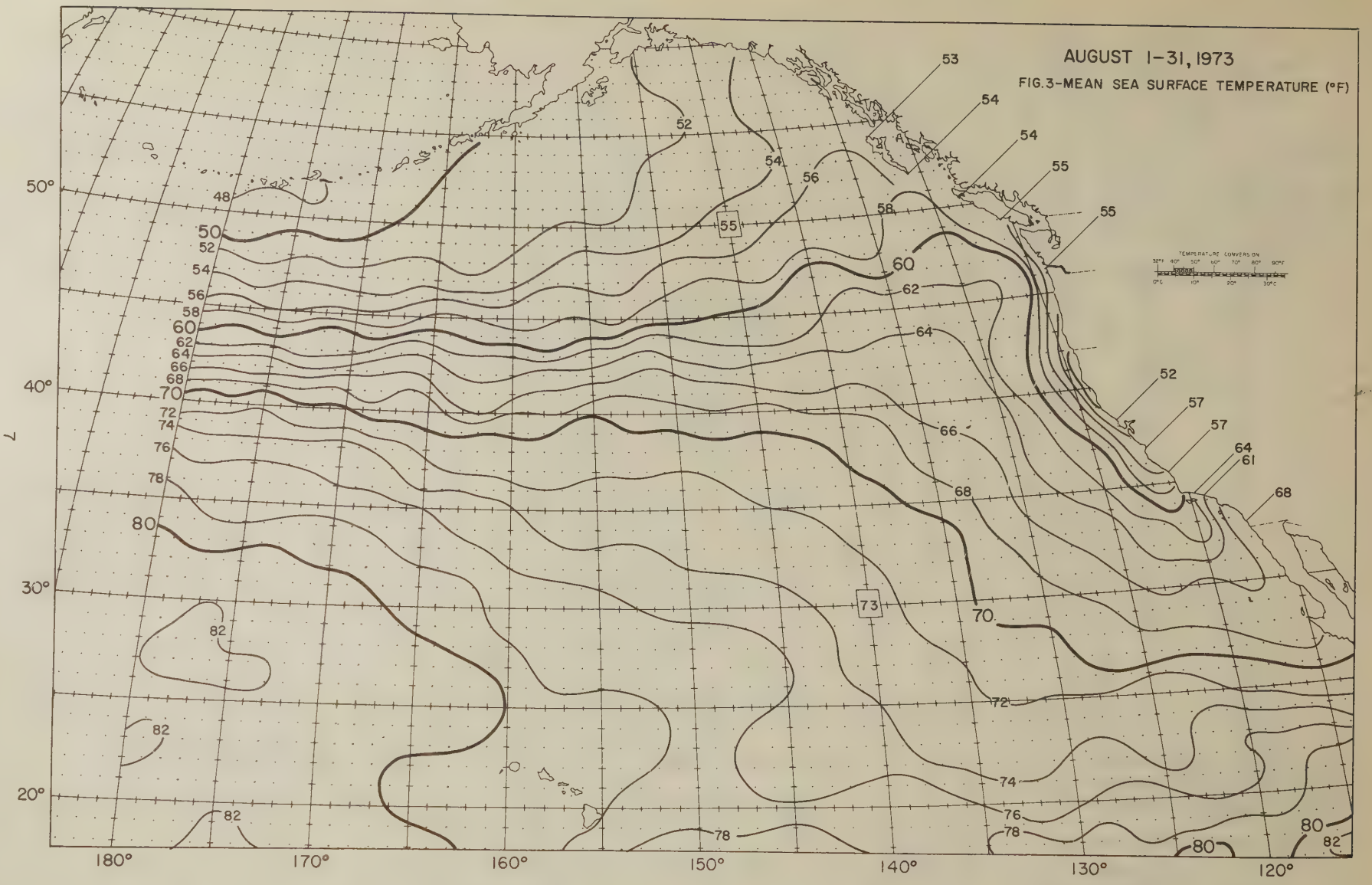
The first series of monthly charts appeared in the April issue of Fishing Information.

During August 1973 four survey flights were conducted and the approximate temperatures at the major fishing locations in °F are shown below (for conversion to °C consult the charts). 1972 temperature data for the corresponding periods are shown in parenthesis (64° etc.). The difference between the 1972 measurement and that observed in 1973 is given below the 1973 temperature.

Survey Date	La Jolla Kelp Area	Point Loma Kelp Area	Tijuana Kelp	Coronado Islands
	1973 1972	1973 1972	1973 1972	1973 1972
August 6, 1973	68° (70°) -2°	67° (69°) -2°	64° (67°) -3°	66° (69°) -3°
August 13, 1973	65° (70°) -5°	65° (69°) -4°	63° (69°) -6°	66° (70°) -4°
August 20, 1973	67° (70°) -3°	67° (71°) -4°	65° (71°) -6°	67° (71°) -4°
August 28, 1973	69° (68°) +1°	68° (68°) 0°	66° (68°) -2°	66° (71°) -5°


AUGUST 1961 – 1973
FIG. 1 – OBSERVED MEAN VALUES
–0000– BAROMETRIC PRESSURE (MILLIBARS).
RESULTANT WIND DIRECTION.
No. RESULTANT WIND SPEED (KTS.).
No. AVERAGE WIND SPEED (KTS.) REGARDLESS OF DIRECTION.
1012
1016
1020
1024
1016
60° N.
55 N.
50 N.
45 N.
40 N
35 N.
30 N.
25 N.
20 N.
180° W.
175 W.
170 W.
165 W.
160 W.
155 W.
150 W.
145 W.
140 W.
135 W.
130 W.
125 W.
120 W.
115 W.


AUGUST 1973
FIG. 2 OBSERVED VALUES
—0000— BAROMETRIC PRESSURE (MILLIBARS).
RESULTANT WIND DIRECTION.
No. RESULTANT WIND SPEED (KTS.).
No. AVERAGE WIND SPEED (KTS.) REGARDLESS OF DIRECTION.
1020
1016
1024
1028
1016
60° N.
55 N.
50 N.
45 N.
40 N.
35 N.
30 N
25 N.
20 N
180° W
175 W
170 W.
165 W.
160 W.
155 W.
150 W.
145 W.
140 W.
135 W.
130 W.
125 W.
120 W.
115 W.


AUGUST 1-31, 1973
FIG.3-MEAN SEA SURFACE TEMPERATURE (°F)
TEMPERATURE CONVERSION
50°
40°
30°
20°
180°
170°
160°
150°
140°
130°
120°
53
54
54
55
55
52
54
56
58
55
48
50
52
54
56
58
60
62
64
66
68
70
72
74
76
78
80
82
82
82
78
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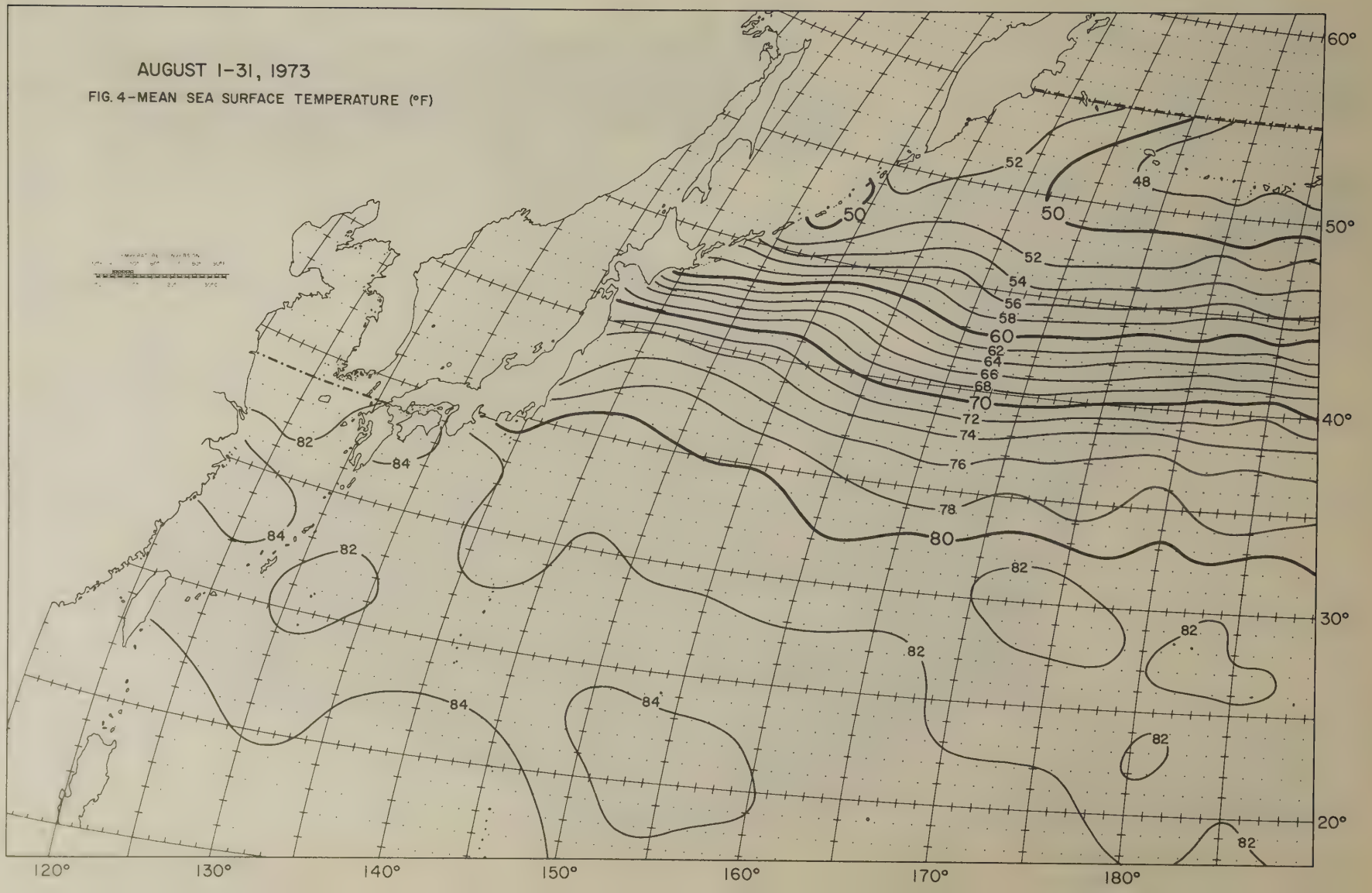
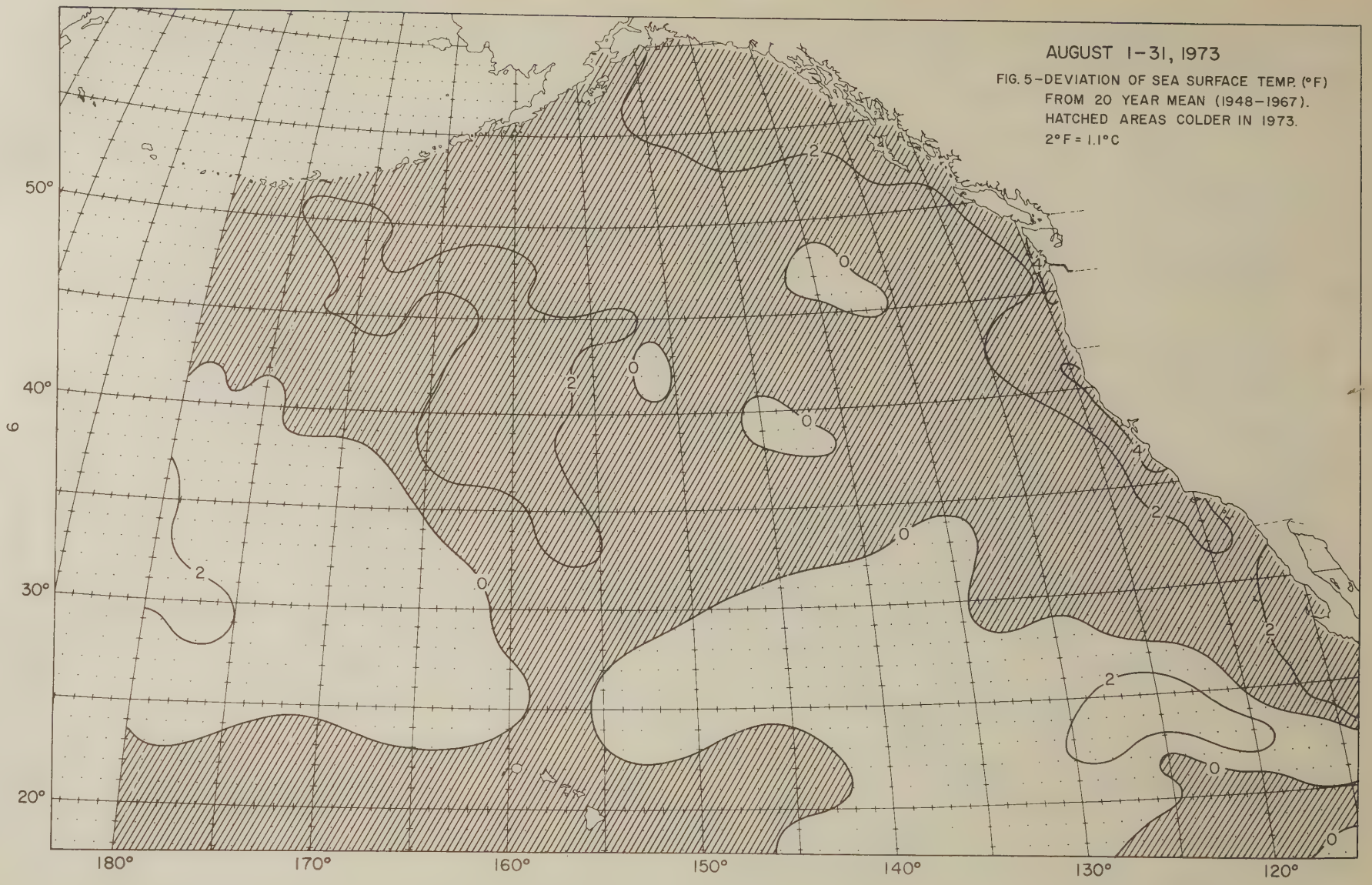
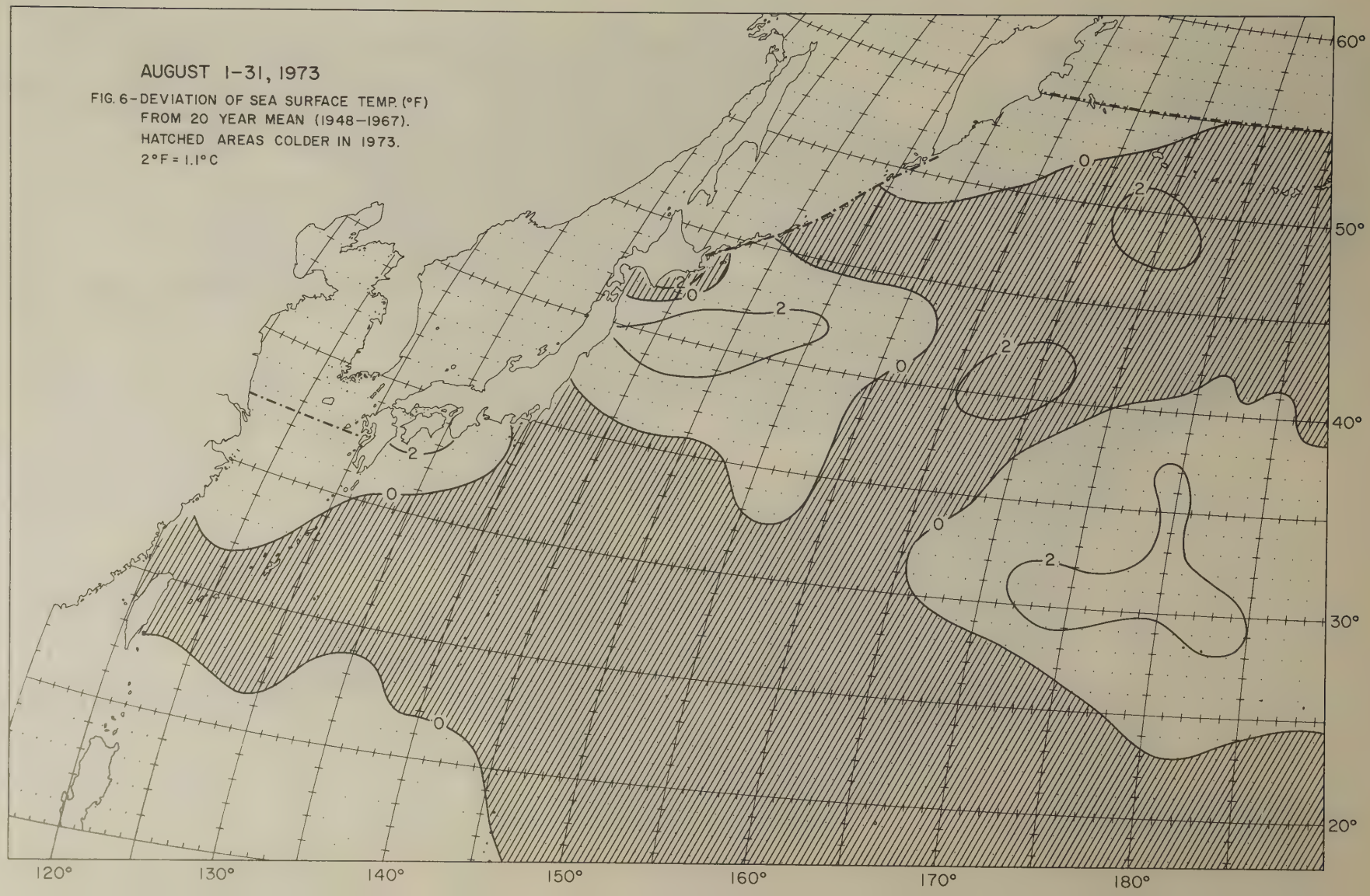
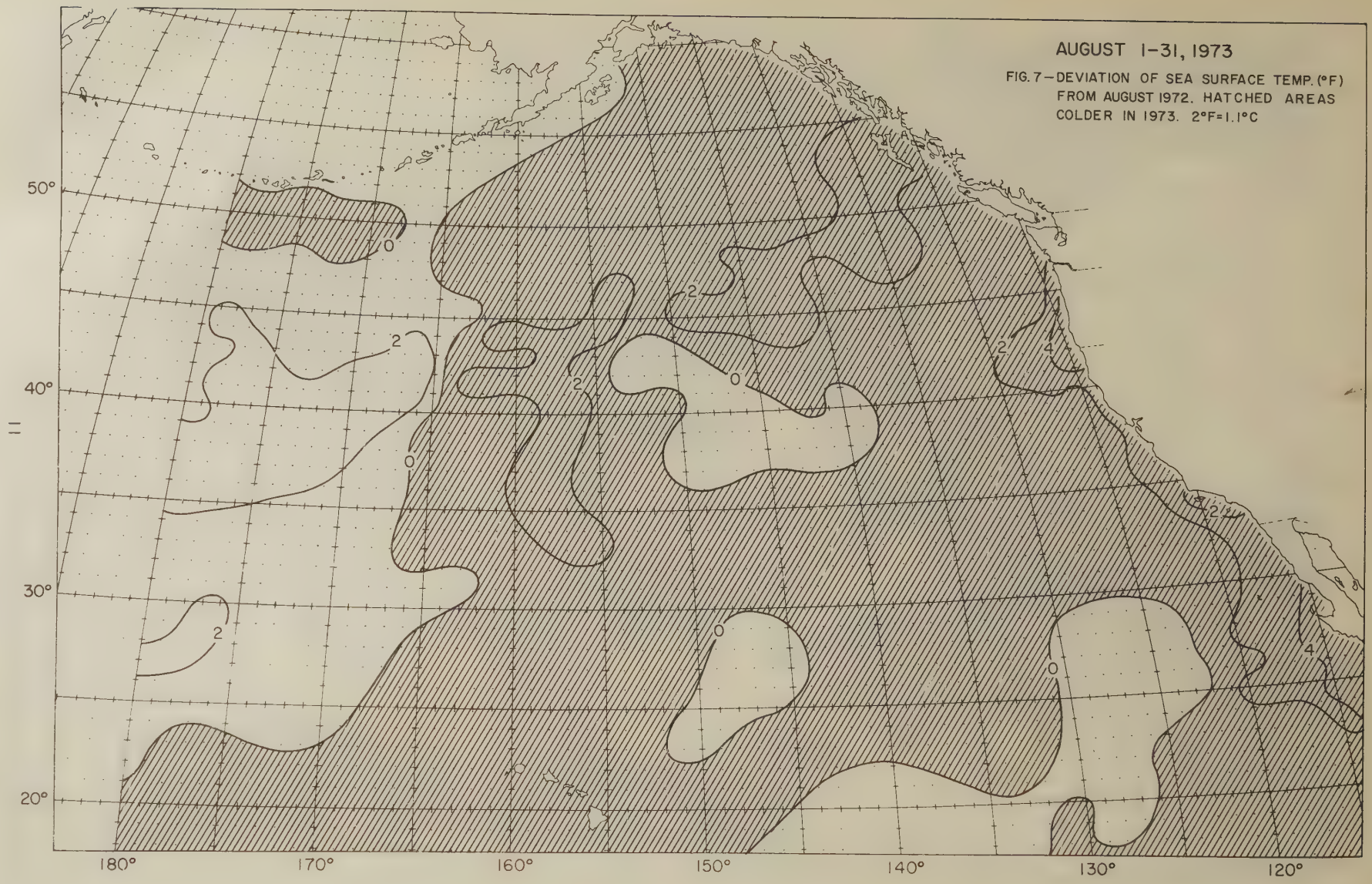
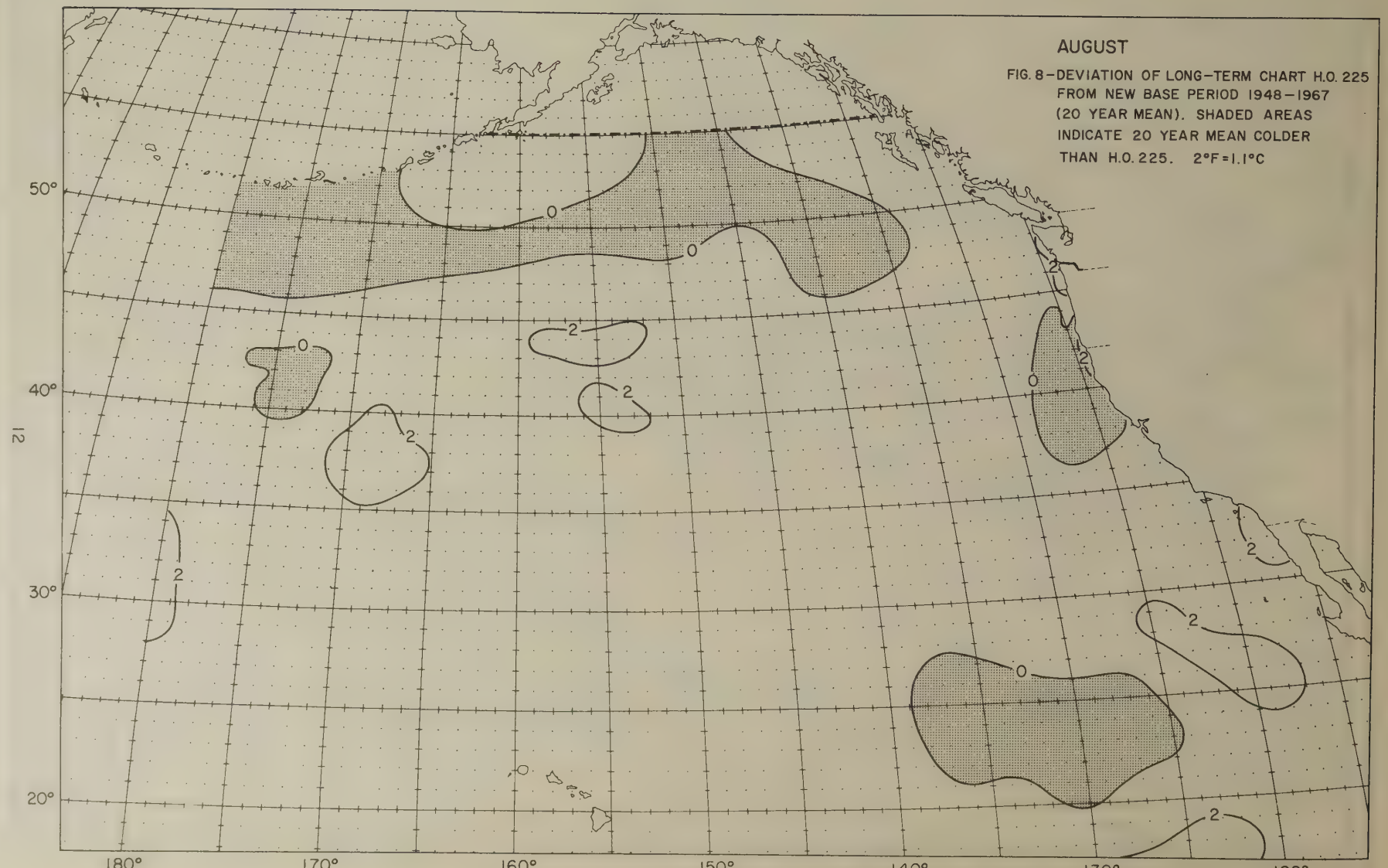
80
80
82
52
57
57
64
61
68
73

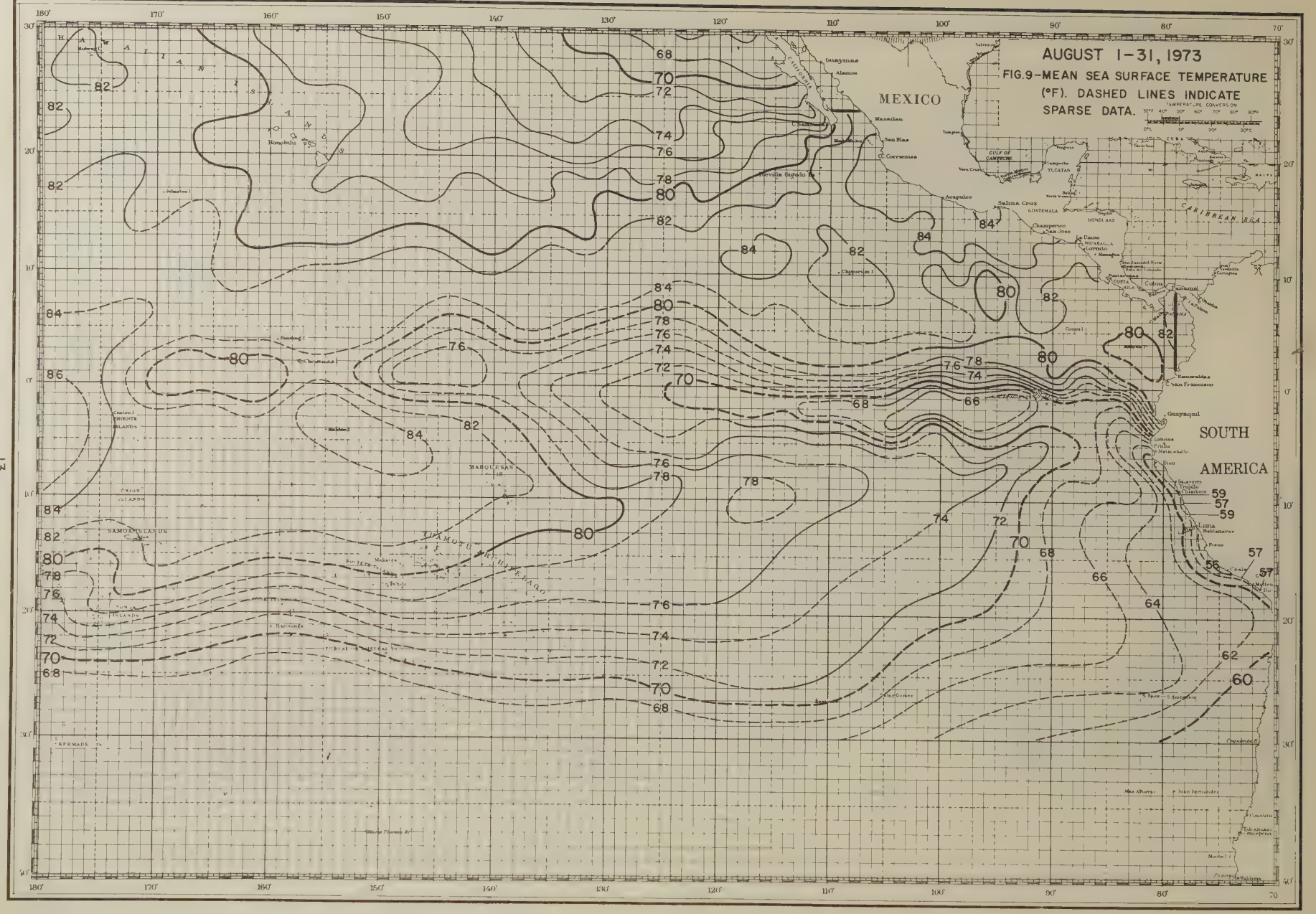

AUGUST 1-31, 1973
FIG. 4-MEAN SEA SURFACE TEMPERATURE (°F)
48
50
52
54
56
58
60
62
64
66
68
70
72
74
76
78
80
82
84
60°
50°
40°
30°
20°
120°
130°
140°
150°
160°
170°
180°

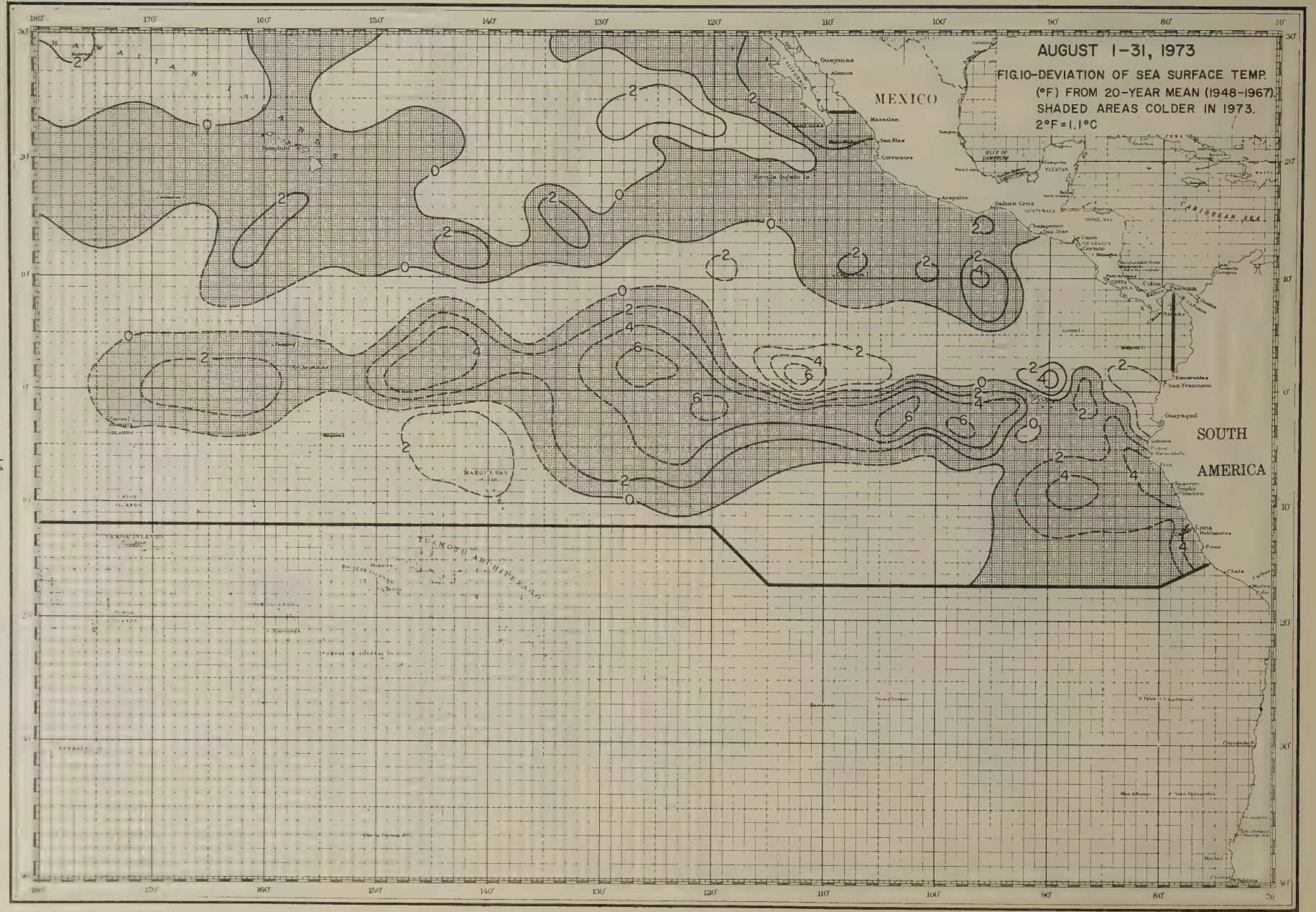

AUGUST 1-31, 1973
FIG. 5-DEVIATION OF SEA SURFACE TEMP. (°F) FROM 20 YEAR MEAN (1948-1967). HATCHED AREAS COLDER IN 1973.
2°F = 1.1°C
50°
40°
30°
20°
180°
170°
160°
150°
140°
130°
120°
2
0
4


AUGUST 1-31, 1973
FIG. 6-DEVIATION OF SEA SURFACE TEMP. (°F)
FROM 20 YEAR MEAN (1948-1967).
HATCHED AREAS COLDER IN 1973.
2°F = 1.1°C
60°
50°
40°
30°
20°
120°
130°
140°
150°
160°
170°
180°
0
2


AUGUST 1-31, 1973
FIG. 7—DEVIATION OF SEA SURFACE TEMP. (°F) FROM AUGUST 1972. HATCHED AREAS COLDER IN 1973. 2°F=1.1°C
50°
40°
30°
20°
180°
170°
160°
150°
140°
130°
120°
0
2
4

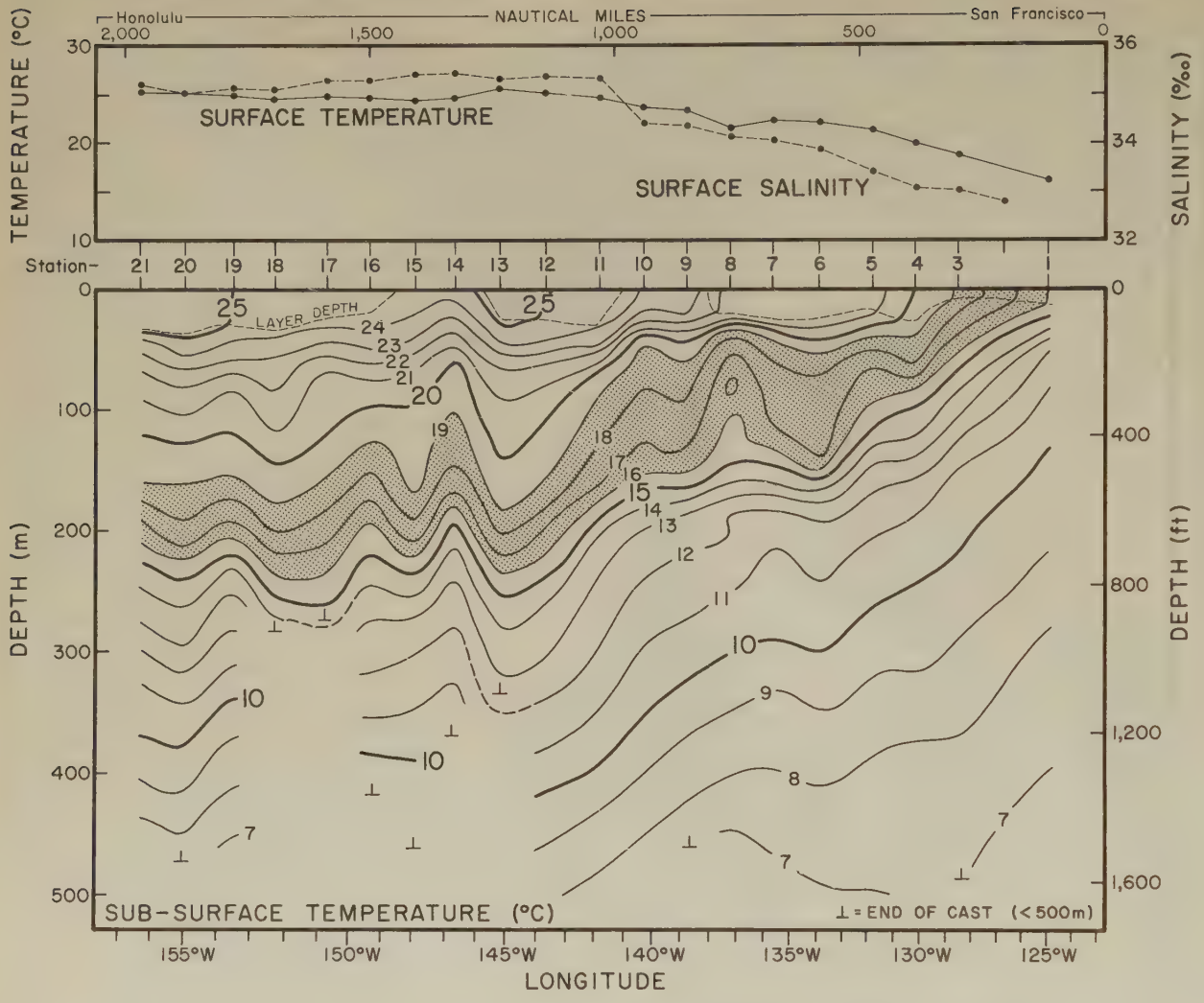

AUGUST
FIG. 8 – DEVIATION OF LONG-TERM CHART H.O. 225 FROM NEW BASE PERIOD 1948–1967 (20 YEAR MEAN). SHADED AREAS INDICATE 20 YEAR MEAN COLDER THAN H.O. 225. 2°F = 1.1°C
50°
40°
30°
20°
180°
170°
160°
150°
140°
130°
120°
0
2

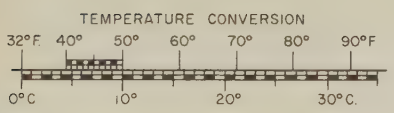

AUGUST 1-31, 1973
FIG.9-MEAN SEA SURFACE TEMPERATURE (°F). DASHED LINES INDICATE SPARSE DATA.
MEXICO
SOUTH AMERICA
HAWAIIAN ISLANDS
Honolulu
Guaymas
Mazatlan
San Blas
Corrientes
Acapulco
Salina Cruz
Champerico
Balboa
Panama
Colon
Esmeraldas
San Francisco
Guayaquil
Salaverry
Chimbote
Lima
Callao
Pisco
Arica
Iquique
Mollendo
Matarani
Antofagasta
Mejillones
Caldera
Coquimbo
Valparaiso
Juan Fernandez
Easter I.
PHOENIX ISLANDS
UNION ISLANDS
SAMOAN GROUP
MARQUESAS
TUAMOTU ARCHIPELAGO
TAHITI
Papeete
Moorea
Raiatea
Rarotonga
Tubuai
Pitcairn I.
KERMADEC
Malpelo I.
Cocos I.
Clipperton I.
Revilla Gigedo Is.
Socorro I.
Johnston I.
Howland I.
Baker I.
Jarvis I.
Palmyra I.
Christmas I.
Fanning I.
Canton I.
Enderbury I.
Gilbert Is.
Ellice Is.
Tokelau Is.
Samoa Is.
Tonga Is.
Fiji Is.
Norfolk I.
New Caledonia
Loyalty Is.
New Hebrides
Solomon Is.
Ocean I.
Nauru I.
Marshall Is.
Caroline Is.
Mariana Is.
Guam
Wake I.
Midway Is.
Kure I.
Necker I.
Nihoa I.
Kauai
Oahu
Molokai
Maui
Hawaii
GULF OF CALIFORNIA
GULF OF CAMPECHE
YUCATAN
CUBA
HONDURAS
GUATEMALA
NICARAGUA
COSTA RICA
CARIBBEAN SEA
TEMPERATURE CONVERSION
68
70
72
74
76
78
80
82
84
86
66
64
62
60
59
57
56


AUGUST 1-31, 1973
FIG.10-DEVIATION OF SEA SURFACE TEMP. (°F) FROM 20-YEAR MEAN (1948-1967). SHADED AREAS COLDER IN 1973.
2°F = 1.1°C
MEXICO
SOUTH AMERICA
CARIBBEAN SEA
TUAMOTU ARCHIPELAGO
MARQUESAS

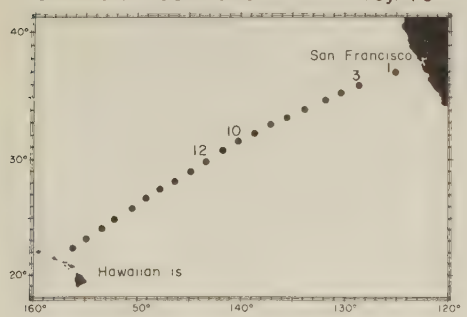
JULY 28 – AUGUST 1, 1973
SS HAWAIIAN ENTERPRISE, Voyage 70

FIGURE 11

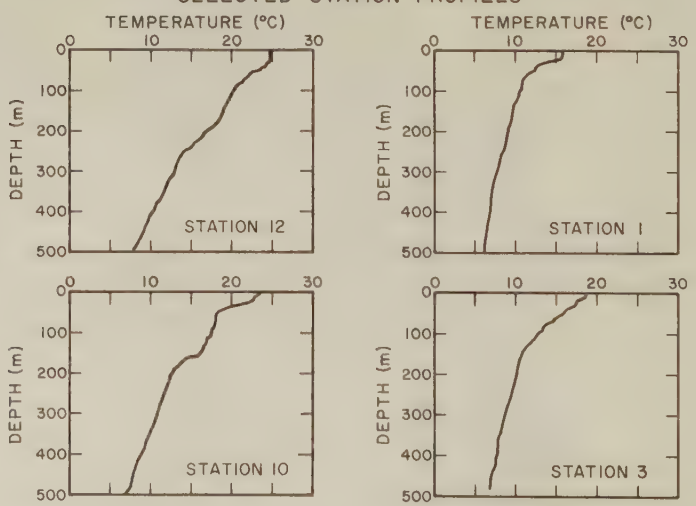




STATION POSITIONS Voy. 70

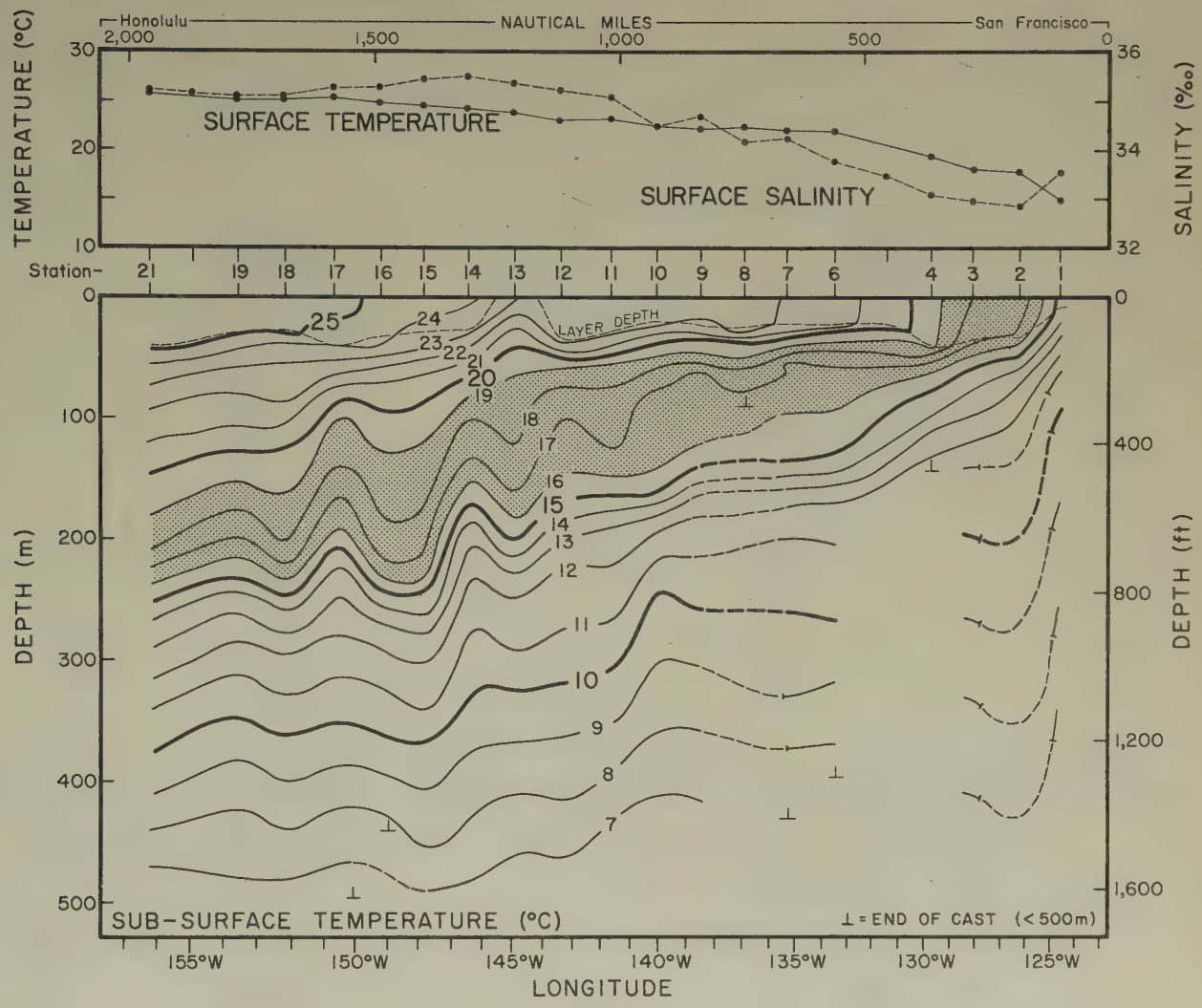


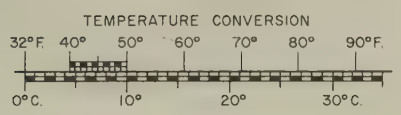
SELECTED STATION PROFILES

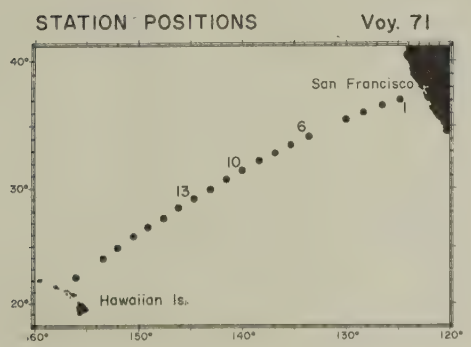


AUGUST 11-15, 1973
SS HAWAIIAN ENTERPRISE, Voyage 71

FIGURE 12







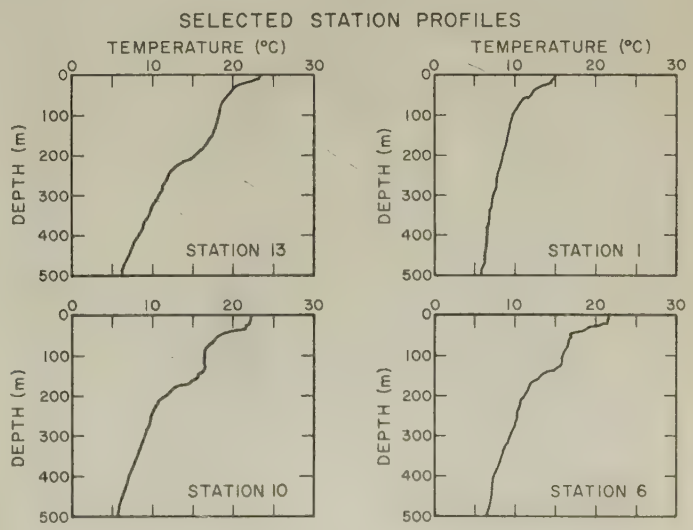
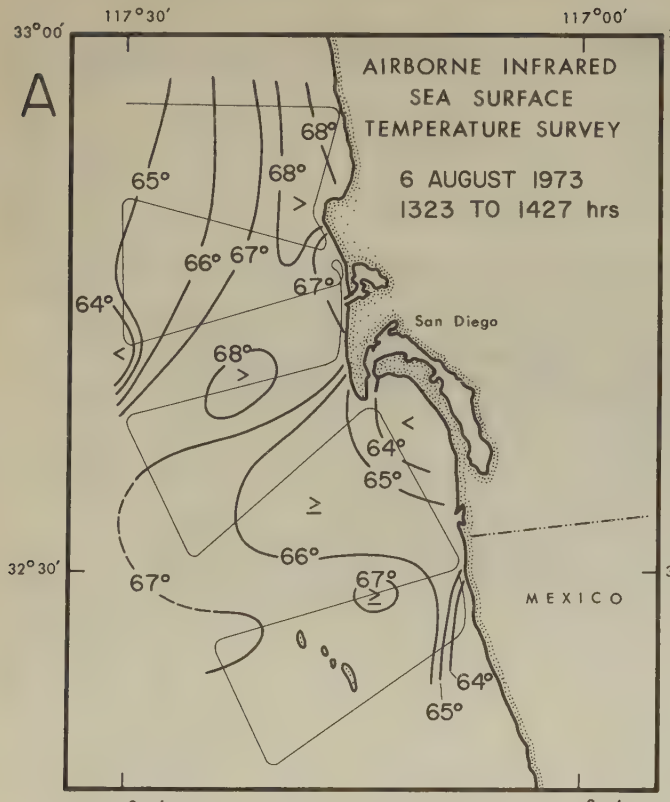
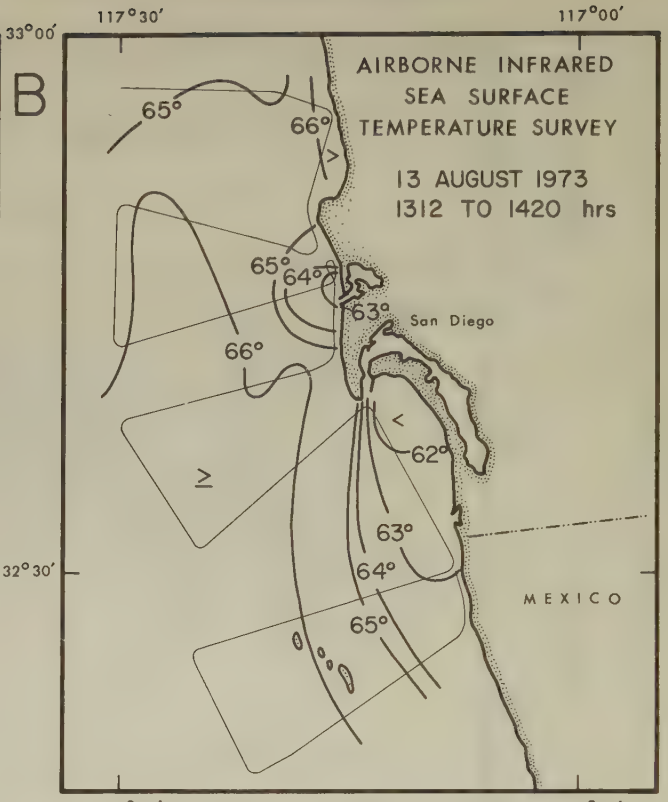
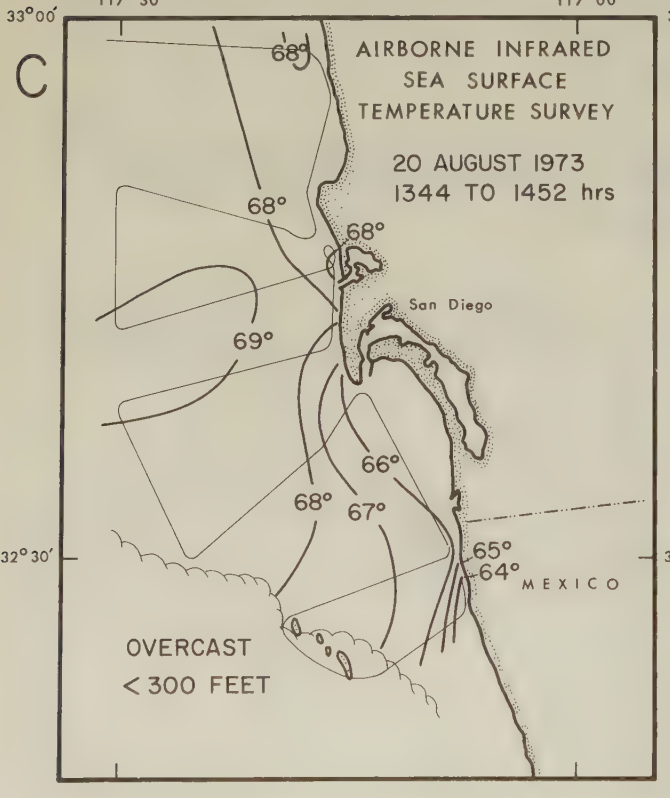
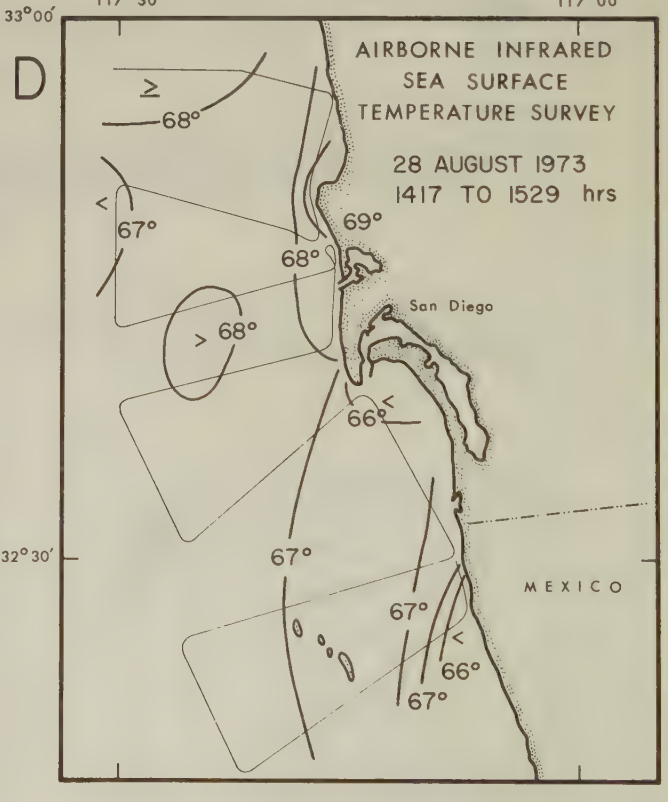


FIGURE 13 — AUGUST 1973

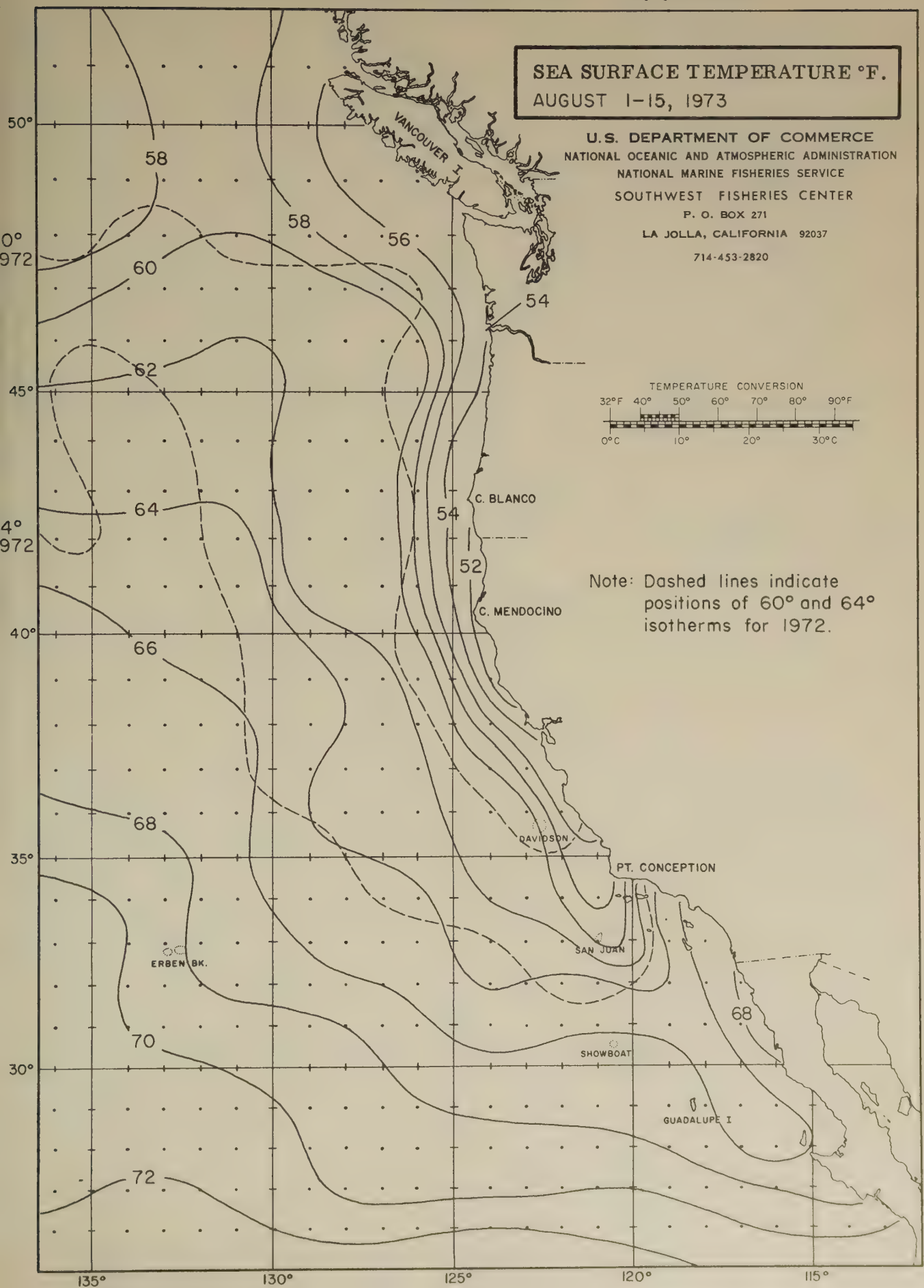




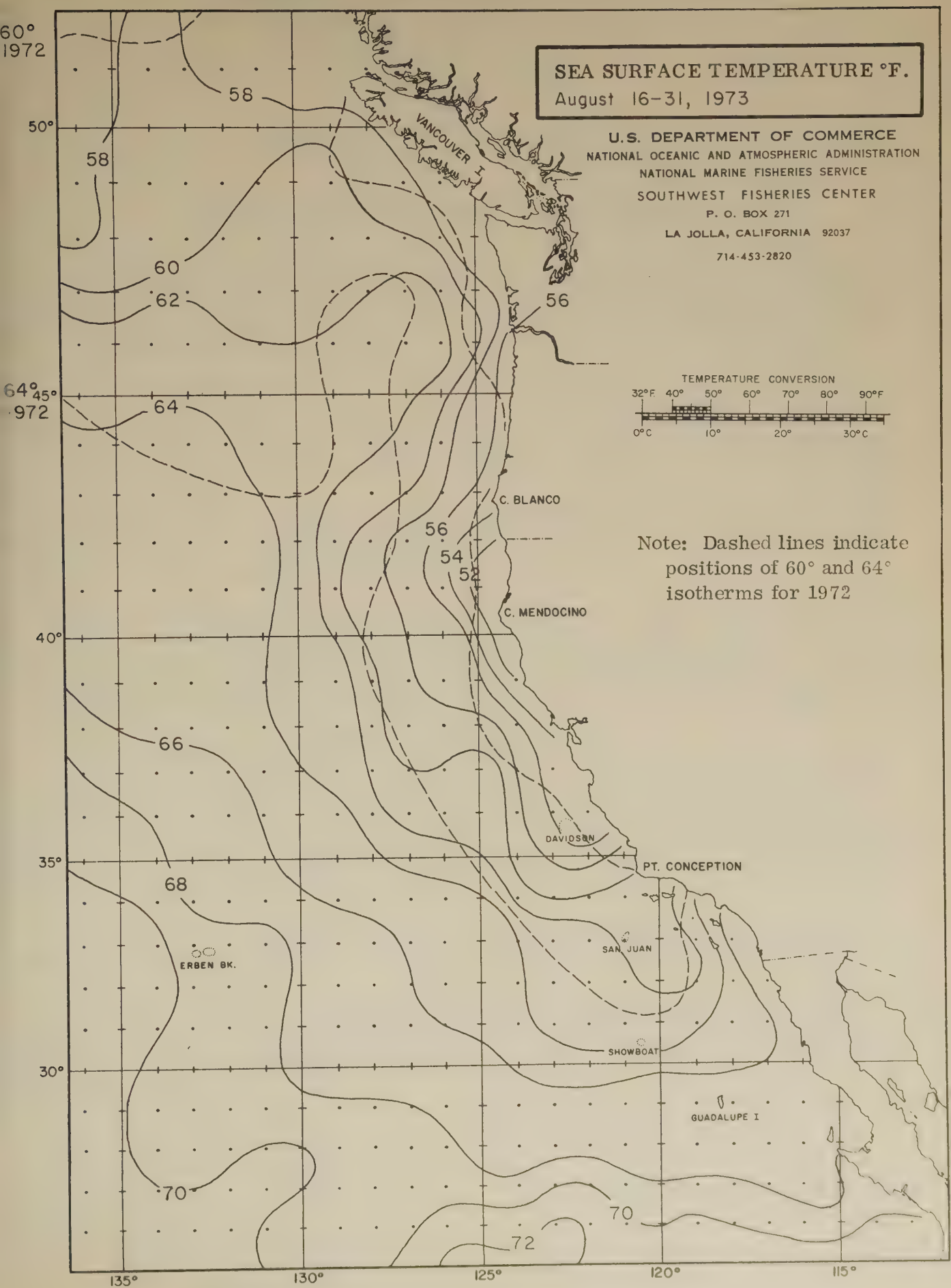




FISHING INFORMATION – supplement



FISHING INFORMATION – supplement



UNITED STATES DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL MARINE FISHERIES SERVICE
Southwest Fisheries Center
La Jolla, California 92037

FISHING INFORMATION BULLETIN NO. 73-4

ALBACORE FISHING IMPROVES FOR PACIFIC NORTHWEST

Albacore fishing improved during the last 2 weeks of July in Pacific Northwest waters. The area of best fishing has been about 75 miles offshore from Cascade Head to Tillamook. A high score of 391 fish was reported from this area on July 31 with several boats reporting 100-150 fish during the last few days of July. Catches of 50 to 70 fish per day were also reported on July 31 in the 3800 block off Vancouver Island.

Albacore began to show near the dumping grounds off the Columbia River on July 17, and by July 20 and 26 boats were also fishing with limited success near the "fingers" off Westport and 70 to 75 miles west of Newport, respectively. Mostly large albacore averaging 18 to 20 pounds were caught in 58° to 61° F (14.4° to 16.1° C) waters off Westport and the Columbia River, while smaller fish of 12 to 16 pounds were caught west of Cascade Head. High catches of about 100 fish were reported on July 25 and 27-28 off Westport.

The Coos Bay to Fort Bragg region had consistent but low catches when weather conditions permitted fishing. Most of the catches were reported from boats working within 50 miles of the coast on fish of 13 to 18 pounds. Top catches were made on July 19 when one boat had 100 fish off Coos Bay and several vessels had 50 to 60 fish scores off Eureka and Fort Bragg.

Central and southern California areas generally had poor fishing throughout most of the last half of July. However, there was some indication that fish began to appear near the 1908 and 1960 fathom spots off Point Arguello on July 29 and 30 when one commercial jig boat caught 100 and 150 fish, respectively, and one sport boat caught 140, 20 to 40 pound albacore in this area on July 30. Fishing has been poor off southern and Baja California with the only very small catches made about 180 to 200 miles west of San Diego on July 17.

As of August 1 a price settlement on albacore has not been reached.

Prevailing weather conditions during the last 2 weeks of July allowed sea surface temperatures to warm at a faster-than-normal rate in most offshore areas. Consequently, temperatures that were below normal during the first half of July either approached normal values or rose to above normal levels during the second half of the month. An exception to these conditions is the region between the Columbia River and Cape Mendocino where frequent periods of strong winds caused temperatures to decrease by as much as 2° F from those of the previous 2-week period.

Along central and southern California, surface temperatures remained below normal, although temperatures slightly above normal did appear south of Point Conception and outside of about 100 miles offshore.

According to information supplied by the Long-Range Prediction Group of the National Weather Service, sea level pressures are expected to remain above normal over the eastern North Pacific during August. These conditions, in conjunction with expected much above-normal temperatures over interior regions of the western states, should cause frequent periods of poor fishing conditions off the Oregon and California coasts due to strong winds and rough seas.

August 1, 1973

Staff, Albacore Fishery Investigations
R. Michael Laurs, Leader

UNITED STATES DEPARTMENT OF COMMERCE
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NATIONAL MARINE FISHERIES SERVICE
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FISHING INFORMATION BULLETIN NO. 73-5

ALBACORE PRICE SETTLEMENT REACHED, FISHING MOSTLY IN PACIFIC NORTHWEST

The U.S. albacore landing price was settled on August 14 at $830 per ton delivered to the canneries at Astoria, San Pedro, and San Diego. Price differentials in other ports are the same as the last two seasons and are as follows: Westport, Washington and Newport, Oregon $805; Coos Bay $795; Moss Landing and Morro Bay $790; and Eureka, Fort Bragg, and San Francisco $780.

During the first half of August most of the albacore fleet has been working from Coos Bay, Oregon to Vancouver Island, British Columbia and some vessels have been working the area off Morro Bay to Point Arguello. High scores in northwest waters have ranged from about 100-400 fish per day with average catches near 75-100 fish in most areas.

Fishing in northwest waters has mainly been in three areas, in the vicinity of Coos Bay, in a large region from Cascade Head to Westport, and off Vancouver Island. The area of best fishing has shown a gradual progression northward during the past 2 weeks. Small catches were reported off Coos Bay until August 6, but on August 7-9 vessels in an area 50-70 miles offshore had good scores of 200-400 fish in 58°-61° F (14.4°-16.1° C) waters. Although fishing has continued after August 10, catches decreased. The Cascade Head to Westport area provided high scores of 100-400 fish a day during most of the past 2 weeks, with average catches slightly less than 100. Commercial boats were mainly fishing inside 100 miles on 13-14 pound albacore also in 58°-61° F water. By August 14 the better catches were being made about 60 miles west of Westport.

Fishing off Vancouver Island improved during the first 2 weeks of August and high catches have generally been 200-250 fish per day with an average of near 100 fish. The fish are averaging 14-15 pounds and are being caught in waters with surface temperatures of 57°-59° F (13.9°-15.0° C).

On August 3-5 both commercial and sport boats had catches of up to 150 fish per day in the area off Morro Bay to Point Arguello. The sport boats were fishing 40-50 miles offshore and the commercial boats were in 60°-61° F (15.6°-16.1° C) waters near the 1908 fathom spot. Rough seas have hampered fishing in this area during most of the second week of August. Vessels that returned to sea near the end of the week report sighting many jumping albacore, but have had difficulty catching them and sport boats report small catches.

Catches south of Point Conception have been almost non-existent for both commercial and sports fishermen.

Northerly winds along the west coast north of Cape Mendocino caused increased upwelling and continued cooling of sea surface temperatures. Coastal waters in the first half of August were 2°-4° F below normal all the way from Point Conception to Vancouver Island. West of 130° W, seasonal warming occurred at a normal rate and surface temperatures did not differ significantly from the long-term means.

Sea surface temperatures south of Point Conception continued to be about 0°-2° F below normal along the coast and slightly above normal beyond 100 miles offshore, north of 32° N.

According to information supplied by the Long-Range Prediction Group of the National Weather Service, atmospheric pressures, both at sea level and aloft, are expected to be above normal over the eastern north Pacific off Northern California and Oregon through the next few weeks. Above-normal air temperatures in western Nevada, Northern California and in Western Oregon, except along the southwest coast, should help maintain strong surface pressure gradients, accompanied by strong northerly winds and rough seas off Northern California and Oregon.

August 15, 1973

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